CLAIMS

1. A stable immunogenic product for inducing antibodies raised against one or more antigenic proteins in a subject, characterized in that it comprises protein immunogenic heterocomplexes consisting of associations between (i) antigenic protein molecules and (ii) carrier protein molecules and in that less than 40% of the antigenic proteins (i) are covalently linked to carrier protein molecules (ii).

2. An immunogenic product according to claim 1, characterized in that each heterocomplex comprise (i) a plurality of antigenic proteins linked to (ii) a carrier protein molecule.

3. An immunogenic product according to claim 2, characterized in that, for each immunogenic heterocomplex, the plurality of antigenic proteins (i) is made up of a plurality of specimens of a single antigenic protein.

4. An immunogenic product according to any one of claims 2 or 3, characterized in that, for each immunogenic heterocomplex, the antigenic proteins (i) consist of a plurality of specimens of a protein being normally recognized as a self protein by the cells of said subject's immune system.

5. A product according to any one of claims 1 to 4, characterized in that it comprises 5 to 50 antigenic proteins (i) for one carrier protein molecule (ii), preferably 20 to 40 antigenic proteins (i) for one carrier protein molecule (ii).

6. An immunogenic product according to any one of claims 1 to 5, characterized in that the covalent bonds between one or more antigenic proteins (i) and the carrier protein molecule (ii) are made through a bifunctional bond chemical agent.

7. An immunogenic product according to claim 6, characterized in that said binding chemical agent comprises at least two free aldehyde functions.

8. An immunogenic product according to claim 7, characterized in that said binding chemical agent is glutaraldehyde.

9. An immunogenic product according to any one of claims 1 to 8, characterized in that the antigenic protein(s) (i) consist(s) in cytokins naturally produced by said subject.

10. An immunogenic product according to claim 9, characterized in that the antigenic protein(s) (i) is/are selected amongst interleukin-4, alpha interferon, gamma interferon, VEGF, interleukin-10, TNF alpha, TGF beta, interleukin-5 and interleukin-6.

11. An immunogenic product according to any one of claims 1 to 8, characterized in that the antigenic protein(s) (i) is/are selected amongst a papillomavirus the protein, the HIV 1 virus Tat protein, the HTLV 1 or HTLV 2 virus Tax protein and the self p53 protein.

12. An immunogenic product according to any one of claims 1 to 8, characterized in that the antigenic protein(s) is/are selected amongst proteins lethal to man at a dosis lower than 1 mg, such as ricin, botulic toxins, staphylococcus enterotoxins as well as an anthrax toxic protein (EF, LF, PA).

13. An immunogenic product according to any one of claims 1 to 12, characterized in that the carrier protein molecule (ii) is an immunogenic protein inducing the production of cytotoxic lymphocytes raised against cells presenting at their surface said carrier protein molecule or any peptide being derived therefrom, in association with molecules of the Major Histocompatibility Complex (MHC) class I.

14. An immunogenic product according to claim 13, characterized in that the carrier protein molecule (ii) is selected amongst papillomavirus L1, L2 and E7 proteins.

15. An immunogenic product according to claim 13, characterized in that the carrier protein molecule (ii) is selected amongst gp160, p24, p17, Nef and Tat proteins of the HIV1 virus.

16. An immunogenic product according to claim 13, characterized in that the carrier protein molecule (ii) is selected amongst CEA, p53, Di12, CaSm, OSA and ETS2 proteins.

17. An immunogenic product according to claim 13, characterized in that the carrier protein molecule (ii) is selected amongst allergenic proteins such Bet v 1, Der p 1 and Fel d 1.

18. An immunogenic product according to any one of claims 1 to 8, characterized in that it is selected amongst immunogenic products comprising the following heterocomplexes, wherein the antigenic proteins (i), on the one hand, and the protein carrier molecule (ii), on the other hand,

are respectively:

a)(i) IL-4 and (ii) KLH;

b)(i) alpha interferon and (ii) KLH;

c)(i) VEGF and (ii) KLH;

d)(i) IL-10 and (ii) KLH;

e)(i) alpha interferon and (ii) gp 160 of VIH1;

f) (i) IL-4 and (ii) the Bet v 1 allergenic antigen; and

g)(i) VEGF and (ii) the papillomavirus E7 protein;

h) (i) the inactivated VIH1 Tat protein and (ii) the VIH1 gp 120 protein;

i) (i) an IgE isotype human antibody and (ii) the inactivated VIH1 Tat protein;

j) (i) the ricin β fragment and (ii) KLH.

19. A composition comprising an immunogenic product according to any one of claims 1 to 18.

20. A pharmaceutical composition comprising an immunogenic product according to any one of claims 1 to 18 in association with one or more physiologically compatible excipients.

21. An immunogenic composition comprising an immunogenic product according to any one of claims 1 to 18 in association with one or more physiologically compatible excipients.

22. A vaccine composition comprising an immunogenic product according to any one of claims 1 to 18 in association with one or more physiologically compatible excipients.

23. An immunogenic composition or a vaccine composition according to any one of claims 21 or 22, characterized in that it comprises the CpG immunity adjuvant.

24. A method for preparing an immunogenic product according to any one of claims 1 to 18, characterized in that it comprises the following steps of:

a) incubating the antigenic proteins (i) and the carrier molecule (ii) in a molar ratio (i):(ii) ranging from 10:1 to 50:1 in the presence of a chemical binding agent;

b) collecting the immunogenic product comprising immunogenic heterocomplexes being prepared in step a).

25. A method according to claim 23, characterized in that the chemical binding agent is glutaraldehyde.

26. A method according to any one of claims 24 and 25, characterized in that step a) is followed by a stabilizing step of the immunogenic heterocomplexes by the formaldehyde, prior to the step b) of collecting the immunogenic product.